

HERRING GULLS DIVING FOR STARFISH

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In September, 1961, we had the opportunity to spend our late afternoons on the public beach on Ocean Avenue in West Haven, Connecticut. Herring gulls (*Larus argentatus*) were common along the beach, and on several afternoons, between 1600 and 1800, we saw a large part of the population diving for starfish, *Asterias forbesi* (Desor), which were numerous about 100 meters seaward from the high tide mark.

Thirty-five to fifty birds swam above the starfish during the low tides on the afternoons of September 8th through the 12th. The members of the flock, all facing south into the wind, formed an elongate group which had its long axis parallel to the shore. In an apparent random order, birds arose from the water a height of approximately two meters, hovered briefly, and then plummeted into the water a short distance in front of their previous swimming positions. They seemed to submerge completely for a moment, although we cannot state this with certainty, for their entry points were obscured by the splashes from their dives. The divers bobbed to the surface immediately, usually grasping a starfish which was moved about between the bills briefly and then swallowed. In one five-minute period six separate birds caught starfish. Immature as well as mature birds were diving. Individual birds dived repeatedly until a starfish was captured and eaten, after which they rested on the water for several minutes before diving again. We were unable to determine the number of starfish eaten by single birds. Occasionally birds flew to an exposed sandbar before devouring their prey. There seemed to be no correlation between the size of the starfish and whether or not they were taken to the sandbar.

The starfish which we collected from the feeding ground were from ten to fourteen centimeters in diameter (diameter = twice the distance from the tip of an arm to the center of the disc). The water at the feeding area was eighty to ninety centimeters deep and was clear enough for us to barely see starfish on the smooth sandbar beneath.

Tinbergen (1953, pp. 36-37) discusses the diving behavior of herring gulls, and he also mentions (op. cit., pp. 25-26) their feed-

ing on dead starfish. To my knowledge, however, there is no record of the herring gull systematically preying upon live, submerged, starfish.

Echinoderms in general form a spiny, unpalatable group. It is interesting, however, that four of the five recent classes are, at least occasionally, preyed upon by birds. Clark (1920, pp. 594-595) reports on "holothurian-like objects" which had been taken from the stomachs of "gulls", and holothurians and a single brittlestar taken from the stomachs of "ducks" collected at Bayou Labatre, Alabama. Bent (1921, p. 111) reports herring gulls feeding on a sea urchin (*Strongylocentrotus dröbachiensis*) abundant on the coast of Maine. The common shallow water sea urchin of south Florida, *Lytechinus variegatus* (Leske) is frequently eaten by gulls which carry the urchins high into the air and drop them onto exposed grass flats. The test of the urchin is usually broken by the impact, and the birds then eat the gonads. Although we have several times seen gulls feeding in this fashion, we do not recall the species of gull involved.

LITERATURE CITED

- BENT, ARTHUR CLEVELAND. 1921. Life histories of North American gulls and terns. Bull. U. S. Nat. Mus., no. 113, 345 pp., 93 pls.
- CLARK, H. L. 1920. Echinoderms in birds' stomachs. Science, vol. 51, pp. 594-595.
- TINBERGEN, N. 1953. The herring gull's world. Collins Ltd., London, 255 pp., 58 figs., 30 pls.

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